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# Sertifikaat

REPUBLIEK VAN SUID-AFRIKA

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# Certificate

REPUBLIC OF SOUTH AFRICA

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Application forms P.1, P.2 and provisional specification and drawings of South African Patent Application No. 2004/1295 as originally filed in the Republic of South Africa on 18 February 2004 in the name of GEBERT, Rüdiger, Heinz for an invention entitled" METHOD AND SYSTEM FOR VERIFYING A TRAFFIC VIOLATION IMAGE ".

Geteken te PRETORIA in die Republiek van Suid-Afrika, hierdie 8th dag van August 2005
Sign in the Republic of South Africa, this day of

Registrateur van Patente
Registrar of Patent

FORM P2

REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

# REGISTER OF PATENTS

| OFFICIAL APPLICATION NO. | LODGING DATE: PROVISIONAL | ACCEPTANCE DATE |
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FULL NAME(S) OF APPLICANT(S)/PATENTEE(S)

71

**GEBERT, Rüdiger, Heinz**

| APPLICANTS SUBSTITUTED: | DATE REGISTERED |
|---|---|
| 71 | |

| ASSIGNEE(S) | DATE REGISTERED |
|---|---|
| 71 | |

FULL NAME(S) OF INVENTOR(S)

72

**GEBERT, Rüdiger, Heinz**

| PRIORITY CLAIMED<br>NB - Use International abbreviation for country<br>(See Schedule 4) | COUNTRY | NUMBER | DATE |
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| | 33 | 31 | 32 |

TITLE OF INVENTION

54

**METHOD AND SYSTEM FOR VERIFYING A TRAFFIC VIOLATION IMAGE**

ADDRESS OF APPLICANT(S)/PATENTEE(S)

**153 NERINA STREET, CLUB VIEW EXTENSION 6, 0157 CENTURION**

| ADDRESS FOR SERVICE | REF |
|---|---|
| 74 **HAHN & HAHN INC, PRETORIA** | |

| PATENT OF ADDITION NO. | DATE OF ANY CHANGE |
|---|---|
| 61 | |
| FRESH APPLICATION BASED ON | DATE OF ANY CHANGE |
| | |

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REVENUE

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# APPLICATION FOR A PATENT AND ACKNOWLEDGEMENT OF RECEIPT

[Section 30 (1) -Regulation 22]

Revenue stamps or revenue franking machine impression

Official date stamp

The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application filed in duplicate

OFFICIAL APPLICATION NO.
21 01 2004/1295

(i) APPLICANT'S OR AGENT'S REFERENCE

(ii) FULL NAME(S) OF APPLICANT(S)
71 **GEBERT, Rüdiger, Heinz**

(iii) ADDRESS(ES) OF APPLICANT(S)
**153 NERINA STREET, CLUB VIEW EXTENSION 6, 0157 CENTURION**

(iv) TITLE OF INVENTION
54 **METHOD AND SYSTEM FOR VERIFYING A TRAFFIC VIOLATION IMAGE**

(v) [ ] The applicant claims priority as set out on the accompanying form P2.
The earliest priority claimed is Country: Number: Date:

(vi) [ ] This application is for a patent of addition to Patent Application No. 21 01

(vii) [ ] This application is a fresh application in terms of section 37 and is based on Patent Application No. 21 01

(viii) This application is accompanied by:

| | | |
|---|---|---|
| x | 1. | A single copy of a provisional specification of 11 pages. |
| x | 2. | Drawings of 2 sheets |
| | 3. | Publication particulars and abstract (form P8 in duplicate). |
| | 4. | A copy of Figure __ of the drawings for the abstract. |
| | 5. | An assignment of invention. |
| | 6. | Certified priority document(s) (state number): |
| | 7. | Translation of the priority document(s). |
| | 8. | An assignment of priority rights. |
| | 9. | A copy of the form P2 and the specification of SA Patent Application No. 21 01 |
| | 10. | A declaration and power of attorney form P3. |
| | 11. | Request for ante-dating on form P4. |
| | 12. | Request for classification on form P9. |
| | 13. | In terms of section 31(1) the applicant has added additional revenue stamps to this form for claiming priority after 12 months but before 15 months from the priority filing date. |
| x | 14. | **Form P2 + copy** |

(ix) 74 Address for service: **HAHN & HAHN INC, 222 Richard Street, HATFIELD, 0083, Pretoria**

Dated this **18** day of **February** 20**04**

Signature of applicant(s) or agent

This duplicate will be returned to the applicant's address for service as proof of lodging but is not valid unless endorsed with an official stamp

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Official date stamp

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2004 -02- 18

REGISTRATEUR VAN PATENTE, MODELLE, HANDELSMERKE EN OUTEURSREG

HAHN & HAHN INC.

FORM P6

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PATENTS ACT, 1978

# PROVISIONAL SPECIFICATION

[Section 30(1) - Regulation 27]

| OFFICIAL APPLICATION NO | |
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| 21 | 01 2004/1295 |

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| FULL NAME(S) OF APPLICANT(S) | |
|---|---|
| 71 | GEBERT, Rüdiger, Heinz |

| FULL NAME(S) OF INVENTOR(S) | |
|---|---|
| 72 | GEBERT, Rüdiger, Heinz |

| TITLE OF INVENTION | |
|---|---|
| 54 | METHOD AND SYSTEM FOR VERIFYING A TRAFFIC VIOLATION IMAGE |

# METHOD AND SYSTEM FOR VERIFYING A TRAFFIC VIOLATION IMAGE

## FIELD OF THE INVENTION

This invention relates to a method and a system for verifying a traffic violation image.

## BACKGROUND TO THE INVENTION

Traffic offences may be repudiated in a court of law. The accuracy of the equipment used to capture a traffic violation is often questioned in these cases. The following invention seeks to provide more concrete proof that a traffic violation took place.

## SUMMARY OF THE INVENTION

According to one aspect of the invention there is provided a method of verifying a traffic violation image which method includes the following steps, in any order:

automatically sensing whether or not a vehicle commits a traffic violation;

automatically capturing an image which shows a vehicle committing a traffic violation if it is sensed that the vehicle has committed a traffic violation;

obtaining verification data which verifies that the step of sensing is accurate within acceptable limits; and

automatically combining the obtained verification data with the captured traffic violation image to provide proof of the accurate sensing of the traffic violation.

It is to be appreciated that the method facilitates the traceability of calibration to a national or international measuring standard for traffic violation detection equipment used to sense and capture traffic violations, e.g. speed limit infringements, non-compliance with traffic signs, and/or the like. This traceability of

calibration enables the tracing of the calibration details of the specific traffic violation detection equipment to establish that the violations recorded by the equipment are indeed accurate and irrefutable. This establishing of accuracy for traffic violations has direct application in a court of law when the validity of recorded traffic violations is disputed.

The step of sensing may include measuring the speed of a vehicle traveling along a road. The step of sensing may include sensing whether a vehicle disobeys a traffic indicator, e.g. a red light, or the like.

The step of capturing the traffic violation image may include photographically capturing the image on film. The step of capturing the traffic violation image may include capturing the image in digital format. The captured traffic violation image may be digitally encrypted. The captured traffic violation image may be digitally signed.

The step of obtaining the verification data may include obtaining calibration data which verifies the calibration history of equipment used to sense the traffic violation and/or capture the traffic violation image. The calibration data may be obtained from an engineer. The step of obtaining the calibration data may include retrieving the calibration data from an electronic storage means. The calibration data stored in the storage means may be periodically updated by an engineer. The calibration data may be automatically generated by suitably configured calibration equipment. The calibration data may include any set of operations, performed in accordance with a definite, documented procedure, that compares the measurements performed by an instrument to those made by a more accurate instrument or standard, for the purpose of detecting and reporting, or eliminating by adjustment, errors in the instrument tested. The calibration data may include validation by means of a digital signature.

The step of obtaining the verification data may include obtaining operational parameters of the sensing means and/or camera used to capture the traffic violation image. The operational parameters may include ambient conditions of the sensing means and/or camera used to capture the traffic violation image, such as

temperature, humidity, light intensity, and/or similar environmental conditions. The operational parameters may include operating levels of components comprising the sensing means and/or camera used to capture the traffic violation image, e.g. voltage levels, current levels, and/or the like. The operational parameters may include the geographic location where the image is captured. The geographic location may be specified by an engineer installing the sensing means and/or camera used to capture the traffic violation image. The geographic location may be supplied by a Global Positioning System (GPS). The operational parameters may include a unique identifying number of an engineer which installed the sensing means and/or camera used to capture the traffic violation image. The operational parameters may include identification numbers of components comprising the sensing means and/or camera used to capture the traffic violation image.

The operational parameters may include a preprogrammed speed limit which, when exceeded by a vehicle sensed by the sensing means, triggers the step of capturing the traffic violation image. The operational parameters may include a grace time period before the step of capturing is triggered by the step of sensing, e.g. the grace time period afforded a motorist after an intersection light has changed before a traffic camera will record if the motorist fails to stop at the intersection. The operational parameters may represent real-time values, typically obtained at the same time that the image is captured. Accordingly, the operational parameters typically include the time and date when the violation image is captured.

The step of obtaining the verification data and the step of capturing the traffic violation image may be performed simultaneously.

The step of combining the verification data with the traffic violation image may include imposing the verification data onto the traffic violation image. The step of combining the verification data may include digitally signing and encrypting the verification data together with a digital violation image. The step of combining the verification data with the traffic violation image may include printing the verification data onto the traffic violation image.

The method may further include the step of storing the verified image on a suitably configured storage means.

The method may include the step of transmitting the verified image to a remote location.

According to a second aspect of the invention there is provided a system for verifying a traffic violation image which system includes:

sensing means for automatically sensing whether or not a vehicle commits a traffic violation;

a camera arranged in communication with the sensing means which camera is configured to automatically capture an image of a vehicle committing a traffic violation if it is sensed that the vehicle has committed a traffic violation; and

a processor arranged in communication with the camera which processor is configured to obtain verification data which verifies that the sensing means senses accurately within acceptable limits, and to combine the obtained verification data with the captured traffic violation image to provide proof of the accurate sensing of the traffic violation.

The sensing means may include any sensor configured to sense whether a vehicle commits a traffic violation, such as, for example exceeding a speed limit, disobeying a road sign, or the like, and may include radar detection, laser detection, an inductive loop, a mechanical switch, an electromechanical switch, piezo-electric sensors, fibre optic sensors, or the like.

The camera may be a digital camera, i.e. a camera which captures images in electronic format. The camera may capture images on photographic film. The traffic violation image may be stored in digital format. The traffic violation image may be digitally signed. The traffic violation image may be digitally encrypted.

The verification data may include calibration data for verifying the calibration history of the sensing means and/or of the camera.

The system may include a storage means for storing the calibration data. Accordingly, the processor may obtain the calibration data from the storage means. The calibration data stored in the storage means may be periodically updated by an engineer. The calibration data may include any set of operations, performed in accordance with a definite, documented procedure, that compares the measurements performed by an instrument to those made by a more accurate instrument or standard, for the purpose of detecting and reporting, or eliminating by adjustment, errors in the instrument tested. The calibration data may include validation by means of a digital signature.

The processor may obtain verification data by obtaining operational parameters of the sensing means and/or camera used to capture the traffic violation image. The operational parameters may include ambient conditions of the sensing means and/or camera used to capture the traffic violation image, such as temperature, humidity, light intensity, and/or similar environmental conditions. The operational parameters may include operating levels of components comprising the sensing means and/or camera used to capture the traffic violation image, e.g. voltage levels, current levels, and/or the like. The operational parameters may include the geographic location where the image is captured. The geographic location may be specified by an engineer installing the sensing means and/or camera used to capture the traffic violation image. The geographic location may be supplied by a Global Positioning System (GPS). The operational parameters may include a unique identifying number of an engineer which installed the sensing means and/or camera used to capture the traffic violation image. The operational parameters may include identification numbers of components comprising the sensing means and/or camera used to capture the traffic violation image.

The operational parameters may include a preprogrammed speed limit which, when exceeded by a vehicle sensed by the sensing means, triggers the camera which captures the traffic violation image. The operational parameters may include a grace time period before the camera is triggered by the sensing means. The processor may obtain the operational parameters as real-time values, typically obtained at the same time that the image is captured. Accordingly, the operational parameters typically include the time and date when the violation image is captured.

The processor may obtain the verification data at the same time that the camera captures the traffic violation image.

The processor may combine the verification data with the traffic violation image by imposing the verification data onto the traffic violation image. The processor may combine the verification data with the image by digitally signing and encrypting the verification data together with the violation image. The processor may combine the verification data with the traffic violation image by facilitating the printing of the verification data onto the traffic violation image. Accordingly, the system may include a printing means for printing the violation image and the verification data onto a suitable surface.

The processor may store the verified violation image on the storage means. The processor may transmit the verified violation image to a remote location.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention is now described, by way of non-limiting example, with reference to the accompanying drawings wherein

Figure 1 shows a schematic diagram of a method of verifying a traffic violation image, in accordance with the invention; and

Figure 2 shows a schematic representation of a system for verifying a traffic violation image, in accordance with the invention.

## DETAILED DESCRIPTION OF THE INVENTION

With reference to the accompanying drawings, a method of verifying a traffic violation image, in accordance with the invention, is generally indicated by reference numeral 10, and a system for verifying a traffic violation image, in accordance with the invention, is generally indicated by reference numeral 30.

The method 10 of verifying a traffic violation image includes the steps of automatically sensing 12 whether or not a vehicle commits a traffic violation, automatically capturing 14 an image which shows a vehicle committing a traffic

violation if it is sensed 12 that the vehicle has committed a traffic violation, obtaining 16 verification data which verifies that the step of sensing 12 is accurate within acceptable limits; and automatically combining 18 the obtained verification data with the captured traffic violation image to provide proof of the accurate sensing of the traffic violation.

The step of sensing 12 typically comprises measuring the speed of a vehicle traveling along a road, but may also include sensing 12 whether a vehicle disobeys a traffic indicator, e.g. a red light, or the like. The step of sensing 12 is performed by sensing means 28 which automatically senses 12 whether or not a vehicle commits a traffic violation. The sensing means 28 includes any sensor configured to sense 12 whether or not a vehicle commits a traffic violation, and includes radar detection, laser detection, a mechanical switch, a hydraulic switch, a pneumatic switch, an electromechanical switch, or the like. In this embodiment of the invention, the sensing means 28 is presented in the form of a piezo-electric sensor 28.

The step of capturing 14 the traffic violation image is achieved by capturing 14 the image in digital format. It is to be appreciated that, in other embodiments, the image may be photographically captured on film. The captured traffic violation image is typically digitally signed and encrypted. In this embodiment of the invention, a digital camera 40 captures the image in electronic format. It is to be appreciated that the camera only captures the image when the camera 40 is triggered by the sensing means 28.

The step of obtaining 16 the verification data includes obtaining 16 calibration data 20 and operational parameters 22 of the sensing means 28 and camera 40. It is to be appreciated that the calibration data 20 verifies the calibration history of the sensing means 28 and the camera 40. The calibration data may be retrieved from a storage means 34. The calibration data 20 stored in the storage means 34 is generally periodically updated by an engineer which calibrates the sensing means 28 and camera 40. The calibration data 20 is typically validated by means of a digital signature. The calibration data may include any set of operations, performed in accordance with a definite, documented procedure, that compares the

measurements performed by an instrument to those made by a more accurate instrument or standard, for the purpose of detecting and reporting, or eliminating by adjustment, errors in the instrument tested.

In this embodiment of the invention, the operational parameters 22 typically include ambient conditions of the sensing means 28 and camera 40 used to capture the traffic violation image, such as temperature, humidity, light intensity, and/or similar environmental conditions. The operational parameters 22 further include operating levels of the individual components comprising the sensing means 28 and camera 40 used to capture the traffic violation image, e.g. voltage levels, current levels, and the like. The operational parameters 22 also include the geographic location where the image is captured. In this embodiment of the invention, the geographic location is programmed by an engineer installing the sensing means 28 and camera 40. In other embodiments, the geographic location may be supplied by a Global Positioning System (GPS). The operational parameters further include a unique identifying number of the engineer which installed the sensing means 28 and the camera 40. The operational parameters also include identification numbers of the individual components comprising the sensing means 28 and the camera 40.

The operational parameters 22 generally also include a preprogrammed speed limit which, when exceeded by a vehicle sensed by the sensing means 28, triggers the camera 40 to capture an image. The operational parameters 22 include a grace time period before the camera 40 is triggered by the sensing means 28, e.g. the grace time period afforded a motorist after an intersection light has changed before a traffic camera will record if the motorist fails to stop at the intersection. In this embodiment, the operational parameters 22 represent real-time values, typically obtained at the same time that the image is captured.

In this embodiment of the invention, the processor 38 obtains 16 the operational parameters 22 through monitoring apparatus 36 arranged in communication with the processor 38, the storage means 34, the camera 40, and the sensing means 40. It is to be appreciated that the monitoring apparatus facilitates the processor 38 obtaining 16 the operational parameters 22.

In this embodiment, the step of combining 18 the verification data with the traffic violation image is achieved by digitally imposing the verification data onto the traffic violation image. In other embodiments, the step of combining 18 the verification data may include digitally signing and encrypting the verification data together with a digital violation image, or the step of combining 18 may include printing the verification data onto the traffic violation image. The processor 38 digitally imposes the verification data onto the traffic violation image.

The processor 38 then stores the verified image on the storage means 34. In this embodiment, the method 10 includes the step of transmitting 26 the verified image to a remote location. Accordingly, the system 30 includes a transmitter 42 for transmitting 26 the verified image to a remote location.

For example, in one embodiment of the invention, if a traffic violation is committed, the sensing means 28 triggers the camera 40 to capture an image of the violation which image typically shows a vehicle for identification purposes. The processor 38 then superimposes the digitally signed calibration data and the operational parameters 22 of the sensing means 28 and camera 40 onto the image. This combining 18 of the verification data with the image accordingly provides a validated violation image which includes the time and date of the violation, the ambient conditions under which the violation took place, identifying numbers of the components used to capture the violation, location of the violation, digitally signed calibration data of the sensing means 28 and camera 40 used to capture the violation, operating levels of the components used to capture the violation, details of the transgression, and an image of a transgressor. This is particularly useful for establishing irrefutable evidence against the transgressor in a court of law.

It is to be appreciated that, in this embodiment of the invention, the system 30 is integrated into the housing 32 of a traffic camera 40.

It shall be understood that the example is provided for illustrating the invention further and to assist a person skilled in the art with understanding the invention and is not meant to be construed as unduly limiting the reasonable scope of the invention.

The Inventor regards it as an advantage that the invention enables the establishment of traceability of calibration for equipment used in capturing traffic violations, thereby providing more concrete proof that a traffic transgression has taken place. The combining of the verification data into a traffic violation image makes the refuting of the violation by a transgressor much more difficult in a court of law.

DATED THIS 18th DAY OF FEBRUARY 2004

HAHN & HAHN INC.
Agent for Applicant

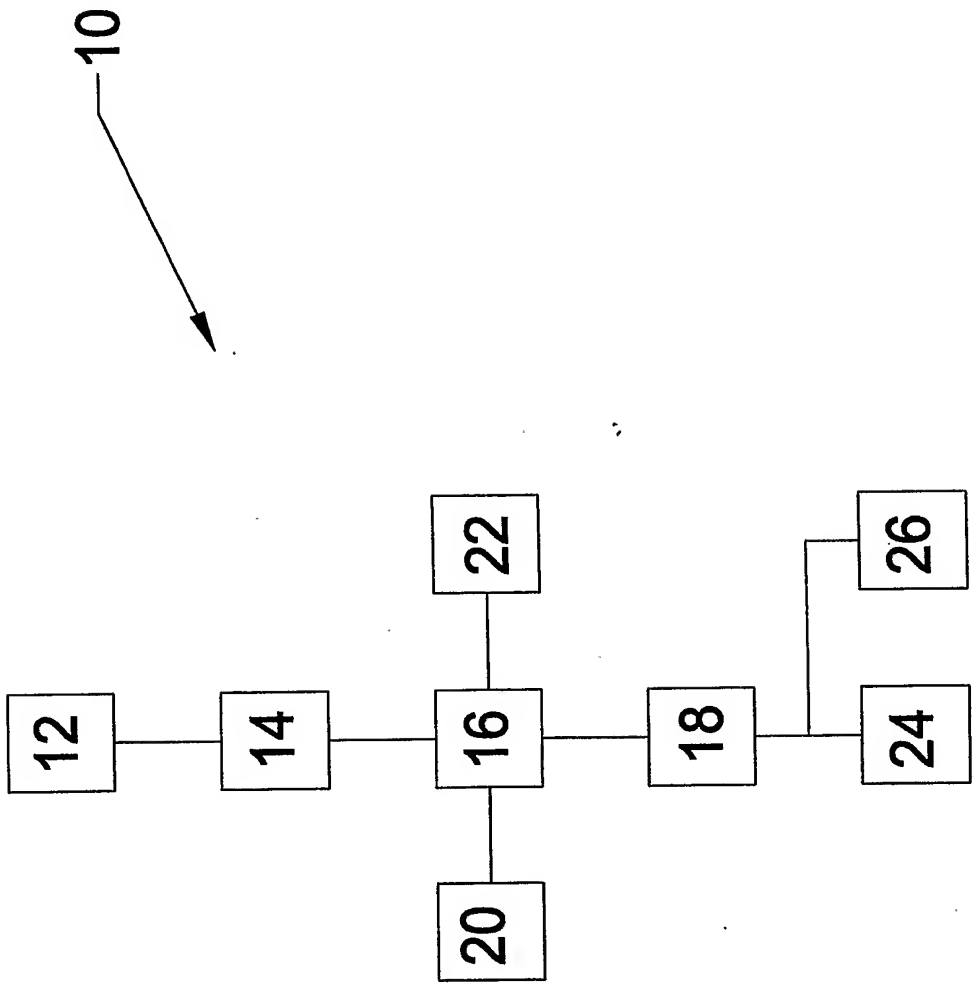


Figure 1.

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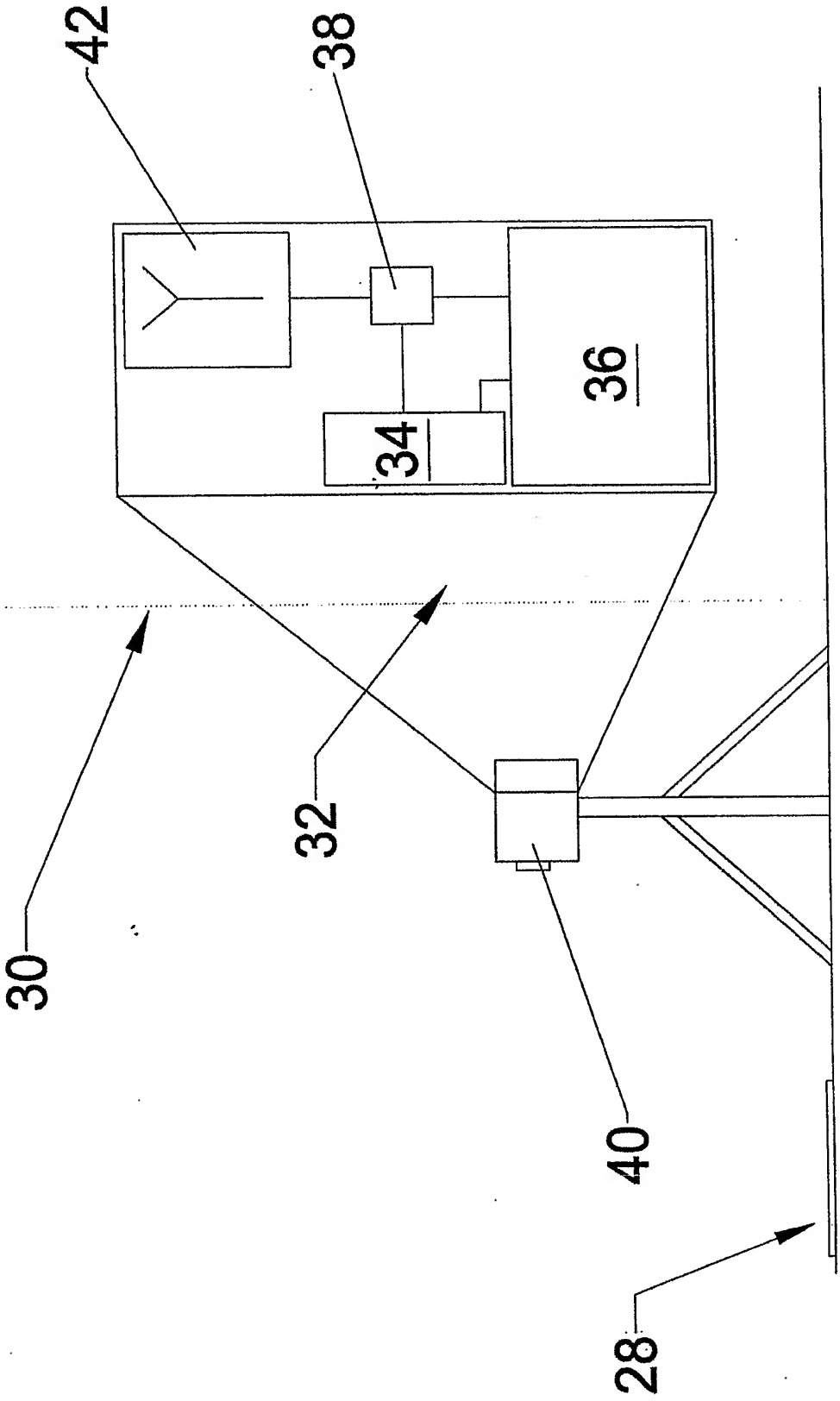


Figure 2.

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